

$^{100}\text{Mo}(\alpha,3n\gamma)$ [1971Le20,1982K102](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2006

E=30– 40 MeV.

Others: [1976De33](#) ($\alpha,3n\gamma$) E=45 MeV; $\Delta J=2$ sequence based on h11/2 state is supported by a γ -ray linear pol.

Measured $E\gamma$, $I\gamma$, $\gamma\gamma$ -coin, α , $\gamma(\theta)$, α , $\gamma(t)$, excit ([1971Le20,1982K102](#)).

Measured $T_{1/2}$ ([1993GoZT](#)).

 ^{101}Ru Levels

The $\Delta J=2$ level spacing resembles ^{100}Ru g.s. band up to 8^+ .

E(level)	$J^\pi^\dagger$	$T_{1/2}^\ddagger$	Comments
0.0 ^{&}	$5/2^+$	stable	
127.5 2	$3/2^+$		
306.8 [@] 2	$7/2^+$		
311.8 2	$5/2^+$		
324.4 2	$1/2^+$		
527.6 [#] 4	$11/2^-$	$17.5 \mu\text{s}$ 4	$T_{1/2}$: from Adopted Levels.
545.1 2	$7/2^+$		
720.1 ^{&} 2	$9/2^+$		
928.2 2	$(7/2^+, 9/2^+)$		
958.6 [#] 5	$15/2^-$		
1000.7 [@] 4	$11/2^+$		
1501.0 ^{&} 4	$13/2^+$	0.59 ps 17	
1622.3 [#] 6	$19/2^-$	>1.2 ps	
1774.3 6	$11/2, 13/2$	2.4 ps +21–10	
1861.9 [@] 4	$15/2^+$	>1.7 ps	
2017.5 6	$(13/2 \text{ to } 19/2)$	>1.4 ps	
2174.0 ^{&} 5	$17/2^+$		
2222.9 6	$(11/2 \text{ to } 19/2)$		
2473.2 [#] 7	$23/2^-$		
2797.5	$(17/2 \text{ to } 23/2)$	0.55 ps +14–7	
2801.9 ^{&} 6	$(21/2^+)$		
2823.3 [@] 5	$19/2^+$		
2885.0 5			
2984.2 7			
3052.0 7	$(15/2 \text{ to } 23/2)$	1.0 ps 4	
3440.8 [@] 7	$(23/2^+)$		
3475.7 [#] 7	$27/2^-$	1.0 ps +4–2	E(level): $27/2^-$ band member on h11/2 state is predicted at 3428 keV (1976De33).
4613.6 [#] 8	$31/2^-$	0.42 ps +21–11	
5849.3 [#] 9	$35/2^-$	0.35 ps +18–7	

[†] From [1982K102](#).

[‡] From [1993GoZT](#).

[#] Band(A): h11/2 coupled to ^{100}Ru quadrupole excitation ([1976De33](#)).

[@] Band(B): $7/2^+$ band with $\Delta J=2$.

[&] Band(C): g.s. band with $\Delta J=2$.

$^{100}\text{Mo}(\alpha, 3n\gamma)$ **1971Le20, 1982K102 (continued)** $\gamma(^{101}\text{Ru})$

671, 844, and 877 γ 's, reported by [1971Le20](#), not seen by [1982K102](#) were not adopted.

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	Comments
127.5 3	11	127.5	3/2 ⁺	0.0	5/2 ⁺	M1+E2	+0.10 2	$A_2=0.01$ 5, $A_4=0.05$ 7.
175.3 3	3.0	720.1	9/2 ⁺	545.1	7/2 ⁺			
179.7 3	1.7	306.8	7/2 ⁺	127.5	3/2 ⁺	E2		
184.3 3	7.6	311.8	5/2 ⁺	127.5	3/2 ⁺	M1+E2	+0.14 1	$A_2=-0.21$ 2, $A_4=0.03$ 3.
197.1 3		324.4	1/2 ⁺	127.5	3/2 ⁺			E_γ : reported only by 1971Le20 .
220.8 3	100	527.6	11/2 ⁻	306.8	7/2 ⁺	M2		$B(M2)(\text{W.u.})=0.156$ 4
238.6 5	2.8	545.1	7/2 ⁺	306.8	7/2 ⁺			$I_\gamma: I_\gamma/I_\gamma(545)=0.050$ in β^- decay, so 238 γ is a multiplet here.
281.1 3	2.6	1000.7	11/2 ⁺	720.1	9/2 ⁺			
306.8 3	129.2	306.8	7/2 ⁺	0.0	5/2 ⁺	M1+E2	-0.10 5	E_γ : doublet. $A_2=-0.21$ 3, $A_4=0.00$ 4.
312.2 3	1.2	311.8	5/2 ⁺	0.0	5/2 ⁺			
324.3 3	0.8	324.4	1/2 ⁺	0.0	5/2 ⁺			
431.0 3	101.6	958.6	15/2 ⁻	527.6	11/2 ⁻	E2 [#]		γ -ray linear polarization studied (1976De33). $A_2=0.37$ 3, $A_4=-0.09$ 4. E_γ : doublet.
511.0 3	17.4	2984.2		2473.2	23/2 ⁻			
545.0 3	9.8	545.1	7/2 ⁺	0.0	5/2 ⁺	M1+E2	-0.98 10	$A_2=-0.76$ 12, $A_4=0.33$ 20. E_γ : reported only by 1971Le20 .
616.1 3	3.4	928.2	(7/2 ⁺ , 9/2 ⁺)	311.8	5/2 ⁺			E_γ : probable doublet.
617.5 7	5.0	3440.8	(23/2 ⁺)	2823.3	19/2 ⁺			
627.9@ 3	11.2	2801.9	(21/2 ⁺)	2174.0	17/2 ⁺			
663.7 3	78.6	1622.3	19/2 ⁻	958.6	15/2 ⁻	E2 [#]		$B(E2)(\text{W.u.})<1.3\times 10^2$ $A_2=0.40$ 4, $A_4=-0.12$ 6. Mult.: γ -ray linear polarization studied (1976De33).
673.0@ 3	15.4	2174.0	17/2 ⁺	1501.0	13/2 ⁺			
693.8 3	24.8	1000.7	11/2 ⁺	306.8	7/2 ⁺	E2 [#]		$A_2=0.22$ 4, $A_4=-0.10$ 6.
720.1 3	24.2	720.1	9/2 ⁺	0.0	5/2 ⁺	E2 [#]		$A_2=0.33$ 5, $A_4=-0.10$ 7.
780.9@ 3	21.0	1501.0	13/2 ⁺	720.1	9/2 ⁺	E2		$B(E2)(\text{W.u.})=1.2\times 10^2$ 4
815.7@ 3	3.2	1774.3	11/2, 13/2	958.6	15/2 ⁻			
850.9 3	40.2	2473.2	23/2 ⁻	1622.3	19/2 ⁻	E2 [#]		$A_2=0.38$ 5, $A_4=-0.09$ 7.
861.2 3	14.5	1861.9	15/2 ⁺	1000.7	11/2 ⁺	E2 [#]		$B(E2)(\text{W.u.})<25$ $A_2=0.33$ 12, $A_4=-0.26$ 20.
928.2 3	4.6	928.2	(7/2 ⁺ , 9/2 ⁺)	0.0	5/2 ⁺			
961.4@ 3	8.3	2823.3	19/2 ⁺	1861.9	15/2 ⁺			
1002.5 3	22.4	3475.7	27/2 ⁻	2473.2	23/2 ⁻			
1023.1@ 3	17.0	2885.0		1861.9	15/2 ⁺			E_γ : doublet.
1058.9@ 3	4.1	2017.5	(13/2 to 19/2)	958.6	15/2 ⁻			
1137.9@ 3	7.8	4613.6	31/2 ⁻	3475.7	27/2 ⁻			
1175.2 3	8.3	2797.5	(17/2 to 23/2)	1622.3	19/2 ⁻			
1235.7@ 3	2.6	5849.3	35/2 ⁻	4613.6	31/2 ⁻			
1264.3@ 3	3.7	2222.9	(11/2 to 19/2)	958.6	15/2 ⁻			
1429.7@ 3	4.2	3052.0	(15/2 to 23/2)	1622.3	19/2 ⁻			

[†] From [1982K102](#). The intensities are rel. to $I_\gamma(220\gamma)=100$.

[‡] From decay experiments, unless otherwise noted.

[#] Deduced from $A_2=0.22$ to 0.46 ([1971Le20](#)) via $\alpha, \gamma(\theta)$.

@ Seen only by [1982K102](#).

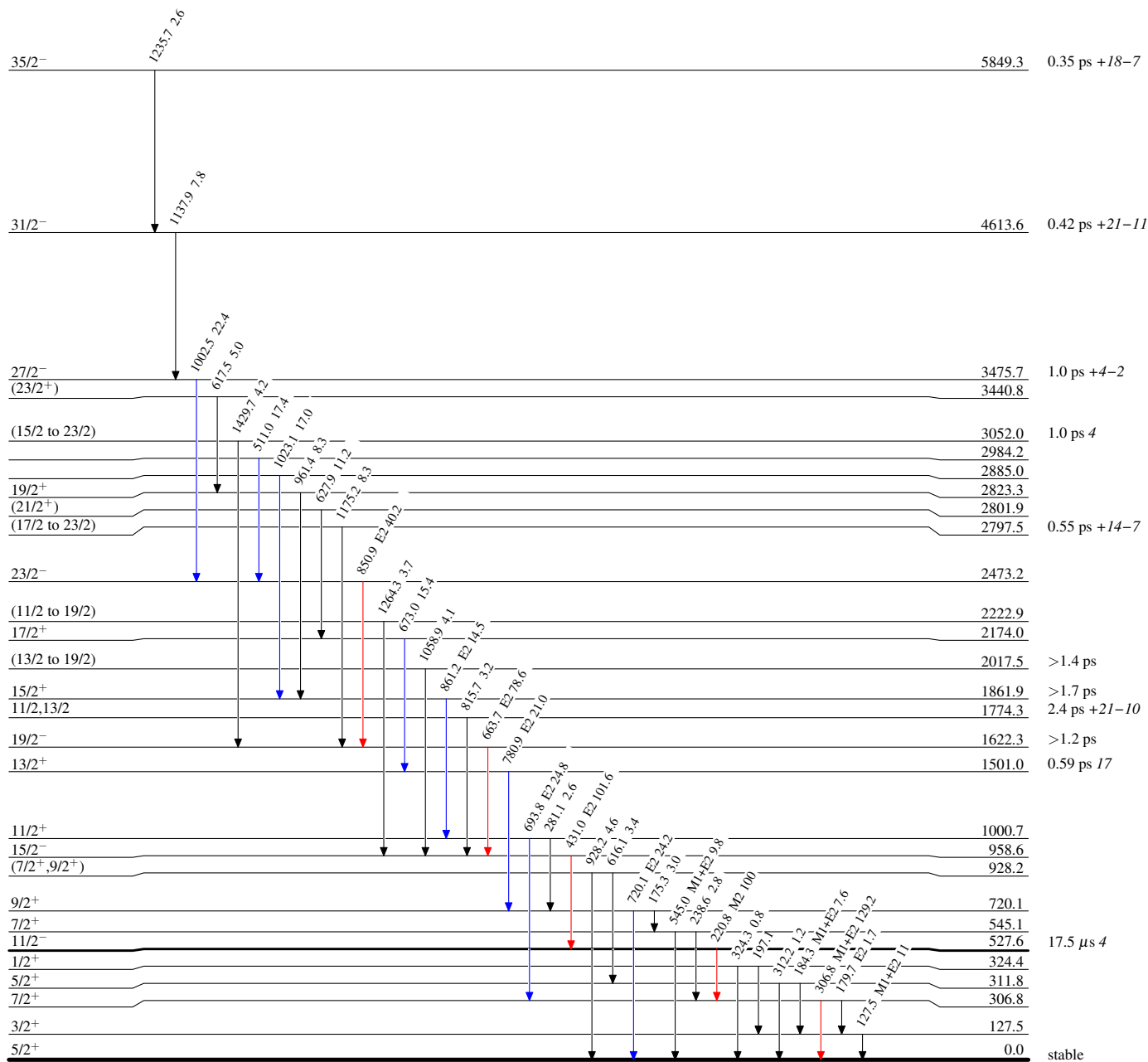
$^{100}\text{Mo}(\alpha,3n\gamma)$ 1971Le20,1982Kl02

Level Scheme

Intensities: Relative I_γ

Legend

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$

 $^{101}_{44}\text{Ru}_{57}$

$^{100}\text{Mo}(\alpha,3n\gamma)$ 1971Le20,1982K102

Band(A): h11/2 coupled
to ^{100}Ru quadrupole
excitation (1976De33)

35/2⁻ 5849.3

1236

31/2⁻ 4613.6

1138

27/2⁻ 3475.7

1002

23/2⁻ 2473.2

851

19/2⁻ 1622.3

664

15/2⁻ 958.6

431

11/2⁻ 527.6

Band(B): 7/2⁺ band with
 $\Delta J=2$

(23/2⁺) 3440.8

618

19/2⁺ 2823.3

961

15/2⁺ 1861.9

861

11/2⁺ 1000.7

694

7/2⁺ 306.8

Band(C): g.s. band with
 $\Delta J=2$

(21/2⁺) 2801.9

628

17/2⁺ 2174.0

673

13/2⁺ 1501.0

781

9/2⁺ 720.1

720

5/2⁺ 0.0

$^{101}_{44}\text{Ru}_{57}$